

REMARKS

Claims 1-14 are pending in this application. By this Amendment, claim 1 has been amended to more particularly point out and distinctly claim the polymerization process and ethylene polymers produced from the process, support for which can be found at page 1, line 2, and page 15, line 1. No new matter has been introduced as a result of this Amendment.

Applicants have also submitted with this Amendment a Supplemental Information Disclosure Statement. Applicants respectfully request that the references listed on the accompanying PTO-1449 form be considered by the Examiner and be made of record herein.

Claim Rejections

Rejections Under 35 U.S.C. § 103

A. Response to rejection of claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over Chiba in view of Korvenoja et al. and Ford et al.

In response to the rejection of claims 1-14 under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent JP 63075009 of Chiba (“Chiba”) in view of U.S. Patent No. 5,204,303 of Korvenoja et al. (“Korvenoja”) and U.S. Patent No. 6,191,239 of Ford et al. (“Ford”), Applicants respectfully submit that a *prima facie* case of Obviousness has not been made out, and traverse the Rejection.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under §103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of non-obviousness. Accordingly, for the Examiner to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. See MPEP §2143. Finally, all claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. (BNA) 580 (C.C.P.A. 1974).

The Examiner has acknowledged that Chiba does not expressly teach using a comonomer in the second stage, an internal electron donor rather than polysiloxane, external electron donor of THF, and conducting the multistage polymerization in different combination of reactors. The Examiner has further acknowledged that Chiba does not disclose polymerization in the gas phase. Clearly, Chiba teaches solution polymerization (page 11, lines 16-18). Moreover, with respect to dependent claim 5, Applicants note that Chiba actually teaches away from the present claims, since Chiba teaches that the use of external donors other than the disclosed glycol ethers exhibits inferior performance:

The reason that the glycol ethers (III) utilized in the present invention ***exhibit significantly better effects compared to other electron-donating compounds*** such as ketones, amines, amides, alkyl ethers, carboxylic esters and halogenated compounds is not entirely clear, but it is believed that said compounds (III) react with organic aluminum compounds (II) to form complexes insoluble in inert solvents that are unable to react with the catalyst residing inside the polymer particles but can significantly deactivate the short-path catalyst predominantly. (page 11, lines 3-8, emphasis added)

Chiba's examples also teach that the use of a non-glycol ether (e.g., dimethyl ether) demonstrates poor performance. (page 19, line 19 to page 20, line 2)

The Examiner has argued that Ford and Korvenoja remedy the deficiencies of Chiba, however, Chiba similarly teaches away from combination with Ford, since Ford specifically teaches "a particular combination of a Ziegler-Natta catalyst, trimethylaluminum (TMA) co-catalyst and tetrahydrofuran (THF) external electron donor makes it possible to produce a polyethylene in an improved manner." (col. 3, lines 6-9, emphasis added)

With respect to Korvenoja, Korvenoja also teaches away from the present claims inasmuch as it's described procatalyst is useful for the "the preparation of ethylene having a narrow molecular weight distribution;" (col. 2, lines 58-61, emphasis added) whereas, the ethylene polymers described in the claimed process have a broad molecular weight distribution (page 15, lines 2-3). Similarly, Korvenoja teaches away from combination with Chiba since Chiba criticizes narrow molecular weight material:

When polyethylene with a *narrow molecular weight* is subjected to hollow molding, the extrusion pressure tends to increase excessively during molding; the molding *becomes difficult* or *significant defects* occur in the product appearance due to formation of strands or pits or melt fracture. (page 4, lines 9-11, emphasis added)

For the above-stated reasons, the modifications suggested by the Examiner clearly do not represent a situation with a finite, and in the context of the art, small or easily traversed, number of options that would convince an ordinarily skilled artisan of obviousness. *Ortho-McNeil Pharm., Inc. v. Mylan Labs., Inc.* Slip Op. 2007-1223, 2008 U.S. App. LEXIS 6786 (Fed. Circ., Mar. 31, 2008) Applicants therefore respectfully submit that no *prima facie* case of Obviousness has been made out by the Examiner.

Reconsideration and withdrawal of the Rejection respectfully is requested.

B. Response to rejection of claims 1-14 under 35 U.S.C. §103(a) as being unpatentable over Ford in view of Gelus and Korvenoja.

In response to the rejection of claims 1-14 under 35 U.S.C. 103(a) as being unpatentable over Ford in view of U.S. Patent No. 5,990,251 of Gelus (“Gelus”) and Korvenoja, Applicants respectfully submit that a *prima facie* case of Obviousness has not been made out, and traverse the rejection.

The threshold showing required under §103 has been discussed above.

First, Ford does not teach, suggest or disclose a two-step polymerization process including a first step (a) and a further step (b), where the molecular weight of the polymer produced in further step (b) is higher than that of the polymer produced in a first step (a). Clearly, Ford teaches a one-step polymerization for the production of an ethylene copolymer without broad molecular weight distribution, evidenced by an I21/I2 ratio in the range 24-34 (col. 5, lines 45-46). The deficiencies of Ford are not remedied by Gelus and Korvenoja. Gelsus teaches a process using a halogenated hydrocarbon compound for increasing catalyst activity. Korvenoja teaches a specific type of catalyst component. Neither Gelsus nor Korvenoja teach, suggest or disclose a two step polymerization process including a first step (a) and a further step (b), where the molecular weight of the polymer produced in further step (b) is higher than that of

the polymer produced in a first step (a). Moreover, as discussed in Paragraph A, Korvenoja actually teaches away from the present claims inasmuch as it teaches “the preparation of ethylene having a narrow molecular weight distribution;” (col. 2, lines 58-61, emphasis added) whereas, the ethylene polymers described in the claimed process have a broad molecular weight (page 15, lines 2-3).

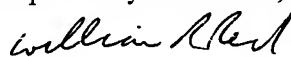
For the above reasons, reconsideration and withdrawal of the Rejection respectfully is requested.

Applicants respectfully request that a timely Notice of Allowance be issued in this case. Should the Examiner have questions or comments regarding this application or this Amendment, Applicants’ attorney would welcome the opportunity to discuss the case with the Examiner.

The Commissioner is hereby authorized to charge U.S. PTO Deposit Account 08-2336 in the amount of any fee required for consideration of this Amendment.


This is intended to be a complete response to the Office Action mailed December 20, 2007.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with sufficient postage thereon with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 10, 2008.


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Date of Signature

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